REMARKS

Claims 1-24, 27-31 and 34-36 are pending in the application. It is gratefully acknowledged that Claims 14-17, 23, 24, 30 and 31 have been allowed. Also it is gratefully acknowledged that Claims 4-8 have been rejected under §112, second paragraph, but would be allowable if rewritten to overcome the rejections or objections. The Examiner rejected Claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite. The Examiner has rejected Claims 35 and 36 under 35 U.S.C. §102(e) as being anticipated by Thomas et al. (U.S. Patent 6,647,078). The Examiner has rejected Claim 34 under 35 U.S.C. §103(a) as being unpatentable over Kuchi et al. (U.S. Patent 6,542,556). The Examiner has rejected Claims 9, 10, 18 and 19 under 35 U.S.C. §103(a) as being unpatentable over Kuchi et al. in view of Whinnett et al. (U.S. Patent 6,317,411). The Examiner has rejected Claims 1-3, 11-13, 20-22 and 27-29 under the judicially created doctrine of double patenting over Kim et al. (U.S. Patent 6,690,712).

Please cancel Claims 1-3, 11-13, 20-22, 27-29 and 35-36, without prejudice. Please amend Claim 4 as set forth herein. No new matter has been added.

As a first initial matter, it is respectfully submitted that the final marking of the Office Action is premature, since the amendments contained in the prior Response were only directed to §112, second paragraph, issues and therefore did **not** change the scope of the claims, and did **not** necessitate any new grounds for the rejections. Based on at least the foregoing, withdrawal of the finality of the Office Action is respectfully requested.

As a second initial matter, with respect to the double patenting rejections of Claims 1-3, 11-13, 20-22 and 27-29, Claims 1-3, 11-13, 20-22 and 27-29 have been cancelled from this application, and thus the rejection has been rendered moot.

The Examiner rejected Claims 1-8 under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 1-3 have been cancelled, the rejection to Claims 1-3 is therefore moot.

Regarding the rejection of Claim 4, the Examiner states that the "second symbol pattern" recited in lines 9 and 11 do not clearly indicate that they are the same. Claim 4 has been amended to address this issue as set forth herein. Based on at least the foregoing, withdrawal of the rejection of Claims 4-8 under 35 U.S.C. §112 is respectfully requested.

Regarding the rejection of Claims 35 and 36 under §102(e), the Examiner states that Thomas et al. anticipates the claims. Claims 35 and 36 are cancelled herein, and thus renders the rejection moot.

Regarding the rejection of Claim 34 under §103(a), the Examiner states that Kuchi et al. renders the claim unpatentable. Kuchi et al. discloses a space-time code for multiple antenna transmission. Claim 34 recites, "means for transmitting pilot signals from the at least four antennas such that at least two same pilot signals are transmitted from at least two antennas." As can be clearly seen from Equation 12 and Equation 13 of Kuchi et al., the four antennas of Kuchi et al. each transmit a different signal; antenna 1 transmits S1W1 and S2W2, antenna 2 transmits –S*2W1 and S*1W2, antenna 3 transmits Sd1W1 and Sd2W2, and antenna 4 transmits – Sd*2W1 and Sd*1W2. Claim 34 recites that at least two **same** pilot signals are transmitted from at least two antennas. Claim 34 cannot be considered unpatentable over Kuchi et al.

The Examiner has rejected Claims 9, 10, 18 and 19 under 35 U.S.C. §103(a) as being unpatentable over Kuchi et al. in view of Whinnett et al. (U.S. Patent 6,317,411). Kuchi et al. discloses a space-time code for multiple antenna transmission; Whinnett et al. discloses a method and system for transmitting and receiving signals transmitted from an antenna array with transmit diversity techniques. In a similar fashion as to that discussed above with respect to Claim 34, Claims 9 and 18 describe a transmitter and transmission method having at least four transmission antennas. The transmitter and method produce two pair of signals, each pair of signals being identical to the other signal in the pair. The four signals are then transmittable through four antennas, ***resulting in two antennas transmitting two identical signals and the other two antennas transmitting another two identical signals***. Kuchi et al. transmits four (4) different

signals.

Also, Claims 9 and 18 recite four (4) antennas that transmit signals derived from two (2) symbol patterns and one (1) orthogonal code. Each of Kuchi et al. and Whinnett et al. transmit a different signal from each antenna. Kuchi et al. is silent as to its spreading process; Whinnett et al. spreads four (4) signals and uses two (2) orthogonal codes. Claims 9, 10, 18 and 19 of the present application recite two signals (which use two symbol patterns, i.e., a first symbol pattern and a second symbol pattern, and the two symbol patterns are orthogonal). The symbol patterns of the present invention are different, thereby the first and second symbol patterns are transmitted through two different antennas.

Further, Whinnett et al. uses two orthogonal codes, whereas the claims of the present application recite one orthogonal code.

Moreover, Kuchi et al. discloses an offset block (104), which implies a transmission of signals through two antennas having different transmission time points is delayed; the claims of the present application recite that signals are transmitted at the same transmission time point.

Still further, transmitting two symbol patterns through 4 antennas using two orthogonal codes using the adder of Whinnett et al. is in essence a method for transmitting signals being orthogonal to each other with four antennas. This is the exact problem of the prior art disclosed in the background of the present application; this is not a method for transmitting signals in a case where there are four Node B transmit antennas. Whinnett et al. is also not a method for transmitting signals in a base station nor a method for receiving signals in a UE where there is a UE employing two-antenna transmit diversity techniques and another UE employing four-antenna transmit diversity techniques. If the transmit antennas are expanded to four in number using a method for expanding the conventional method for transmitting a signal through a single antenna to a method for transmitting a signal through two transmit antennas, the UE employing the two-antenna transmit diversity techniques will not operate normally. In an attempt to solve the problem, if a method for transmitting

a signal through two antennas and a method for transmitting a signal through four antennas are used at the same time, there will be another problem of non-uniformly distributed power between the antennas.

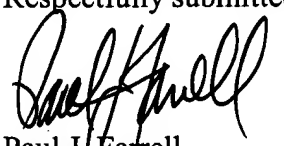
Kuchi et al. discloses changing an inputted signal to have a different transmission time period in an offset block 104 and delaying and transmitting the signal. On the contrary, the claims of the present application do not transmit a signal at a different transmission time period, and therefore the claims of the present application are different from Kuchi in that the signal is transmitted at the same transmission time period.

Moreover, the claims of the present application relate to spreading a symbol pattern with an orthogonal code to a spread signal at the time of multiplication, and therefore cannot be derived from the combination of Whinnett and Kuchi.

Independent Claims 4, 9 and 18 are believed to be in condition for allowance. Without conceding the patentability per se of dependent Claims 5-8, 10 and 19, these are likewise believed to be allowable by virtue of their dependence on their respective amended independent claims. Accordingly, reconsideration and withdrawal of the rejections of dependent Claims 5-8, 10 and 19 is respectfully requested.

Accordingly, all of the claims pending in the Application, namely, Claims 4-10, 14-19, 23, 24, 30, 31 and 34 are believed to be in condition for allowance. Should the Examiner believe that a telephone conference or personal interview would facilitate resolution of any remaining matters, the Examiner may contact Applicants' attorney at the number given below.

Respectfully submitted,



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